

What is claimed is:

1. A device for creating a perforation in material within a patient comprising:

5 an elongate member having a proximal region and a distal region capable of adopting a curved shape; and

a functional tip at the distal region for delivering energy to create the perforation in the material;

10 wherein when the functional tip advances through the material, the distal region adopts a curved shape to direct the functional tip in a desired direction.

2. The device as claimed in claim 1 wherein the material comprises a body tissue.

15 3. The device as claimed in claim 1 wherein the curved shape is defined by a radial arc.

4. The device as claimed in claim 1 wherein the proximal region comprises a marking indicative of the orientation of the curved shape.

5. A device for creating a perforation in a heart septum comprising:

an elongate member having a proximal region and a distal region capable of adopting a curved shape;
5 and

a functional tip at the distal region for delivering energy to create the perforation in the septum;

10 wherein when the functional tip advances through the septum, the distal region adopts a curved shape to direct the functional tip in a desired direction.

6. The device as in claim 5 wherein the curved shape is defined by a radial arc.

7. The device as claimed in claim 5 wherein the functional tip is directed away from cardiac structures.

15 8. The device as claimed in claim 7 wherein the functional tip is directed away from cardiac structures in order to decrease risk of unwanted injury.

9. The device as in claim 5 wherein the proximal region comprises a marking indicative of an orientation of
20 the curved shape.

10. The device as in claim 5 wherein the energy form is mechanical and the functional tip comprises a sharp tip.

11. The device as in claim 10 wherein a portion of the distal region defining the curved shape is made of super-elastic metal.
12. The device as claimed in claim 5 wherein the energy is at least one form of energy selected from a group consisting of: electrical current; microwave; ultrasound; mechanical; and laser.
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13. The device as claimed in claim 5 wherein the energy is electrical current having a frequency within the radio frequency (RF) range.
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14. The device as claimed in claim 13 wherein the electrical current energy in the RF range is applied to ionize a conductive medium on top of a target tissue resulting in a low temperature molecular disintegration.
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15. The device as claimed in claim 5 wherein the heart septum comprises cellular tissue and wherein the functional tip is operable to deliver sufficient energy to the tissue to result in cell lysis.
- 20 16. The device as claimed in claim 5 comprising a pressure sensing mechanism associated with the distal region for monitoring pressure about the distal region.
17. The device as claimed in claim 16 wherein the pressure sensing mechanism comprises a pressure transmitting lumen extending between the proximal and distal
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regions, the lumen adapted at the proximal region for fluid communication with a pressure transducer and adapted at the distal region for fluid communication with an environment about the distal region.

- 5 18. The device as claimed in claim 17 wherein the distal region defines at least one opening to the environment and wherein the lumen is in fluid communication with the at least one opening.
- 10 19. The device as claimed in claim 16 wherein the pressure sensing mechanism comprises a pressure transducer onboard the distal region, the transducer being adapted for communication with a pressure monitoring system.
20. The device as claimed in claim 5 wherein the functional tip comprises at least one active electrode.
- 15 21. The device as claimed in claim 5 wherein the functional tip comprises two or more electrodes.
- 20 22. The device as claimed in claim 21 wherein the electrodes are configured in an arrangement where at least one of the electrodes is active and at least one is a return electrode.
23. The device as claimed in claim 5 wherein the distal region comprises a distal portion and a proximal portion, the distal portion defining a straight shape and the proximal portion defining the curved shape.

24. The device as claimed in claim 23 wherein the distal portion defines a length of about 1cm.
25. The device as claimed in claim 23 wherein the proximal portion defines a length of about 6cm and wherein the curved shape extends about 270 degrees of the circumference of a circle.
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26. An electrosurgical device comprising:
 - an elongate member having a proximal region and a distal region comprising a functional tip, the distal region shaped such that the functional tip is directed towards a desired location after perforating an interatrial septum;
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 - at least one electrode associated with the functional tip for cutting tissue, the at least one electrode adapted for coupling to an electrical energy source;
15 and
 - a pressure sensing mechanism associated with the distal region for sensing pressure at a desired location within a patient, the mechanism adapted for coupling to a pressure monitoring system.
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27. A device as claimed in claim 26 wherein the functional tip is directed away from cardiac structures.

28. A device as claimed in claim 27 wherein the functional tip is directed away from cardiac structures in order to decrease risk of unwanted injury.
29. The device as claimed in claim 26 wherein the pressure sensing mechanism is configured to minimize a portion of the elongate member that is necessary to be located at the desired location to monitor pressure.
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30. The device as claimed in claim 26 wherein the pressure sensing mechanism comprises a pressure transmitting lumen defined within the elongate member extending from the proximal region to couple to at least one opening defined in the distal region.
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31. The device as claimed in claim 30 wherein the proximal region is adapted for coupling the pressure transmitting lumen to a pressure transducer associated with the pressure monitoring system.
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32. The device as claimed in claim 31 wherein the pressure transmitting lumen is adapted for at least one of injecting a fluid to or removing a fluid from the patient.
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33. The device as claimed in claim 30 wherein the at least one electrode is coupled to the electrical energy source by a coupling means extending through the pressure transmitting lumen.

34. The device as claimed in claim 26 wherein the pressure sensing mechanism comprises an on-board pressure transducer adapted for communicating a transduced pressure signal representative of pressure about the distal region to the pressure monitoring system.
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35. The device as claimed in claim 26 wherein the at least one electrode defines a functional tip comprising a conductive and radiopaque material at the distal region.
- 10 36. The device as claimed in claim 26 wherein the electrical energy source is capable of providing high-frequency electrical energy to the functional tip in a high impedance range.
37. The device as claimed in claim 26 wherein the proximal region is adapted to releasably couple the pressure sensing mechanism to the pressure monitoring system.
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38. The device as claimed in claim 26 wherein the proximal region is adapted to releasably couple the electrode to the electrical power source.
- 20 39. A device for creating a perforation in a heart septum comprising:
- an elongate member having a distal region and a proximal region;

a functional tip at the distal region for delivering energy to create the perforation in the septum; and

5 a control associated with the distal region and operable from the proximal region, wherein the control is operable to modify a shape of the distal region to direct the functional tip in a desired direction.

40. A method of creating a perforation in a heart septum comprising:

10 applying a form of energy to a perforation device positioned at a desired location of a heart septum to create a perforation at the desired location, wherein the perforation device comprises an elongate member having a proximal region and a distal region
15 capable of adopting a curved shape; and

while advancing a distal tip of the device through the septum, directing the distal tip in a desired direction.

41. The method of claim 40 wherein the perforation device
20 comprises a control associated with the distal region and operable from the proximal region, wherein the control is operable to modify a shape of the distal region to direct the distal tip in a desired direction in relation to cardiac structures; and wherein the
25 method comprises operating the control.

42. The method of claim 40 wherein the method comprises manipulating the distal region to adopt the curved shape.
43. The method of claim 40 wherein the distal tip is directed away from cardiac structures in order to decrease risk of unwanted injury.
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44. The method of claim 40 wherein the perforation device comprises a pressure sensing mechanism for sensing pressure at the distal tip and wherein the method comprises monitoring the pressure to indicate a location of the distal tip.
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45. The method of claim 40 wherein the perforation device comprises an orientation indicator for determining a direction of the distal tip and wherein the method comprises monitoring the orientation indicator to advance the distal tip through the septum in a desired direction.
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